What Is Claimed Is:

1. A method for high speed, scanning phase measuring of an object at a vision station to develop physical information associated with the object, the method comprising the steps of:

projecting a pattern of imagable electromagnetic radiation with at least one projector;

moving the object relative to the at least one projector at the vision station to scan the projected pattern of electromagnetic radiation across a surface of the object to generate an imagable electromagnetic radiation signal;

receiving the imagable electromagnetic radiation signal from the surface of the object with a detector having a plurality of separate detector elements;

maintaining the at least one projector and the detector in fixed relation to each other;

measuring an amount of radiant energy in the received electromagnetic radiation signal with the detector wherein the detector elements produce images having different phases of the same scanned surface based on the measurement; and

computing phase values and amplitude values for the different phases from the multiple images.

2. The method as claimed in claim 1 wherein the physical information is dimensional information and the imagable electromagnetic radiation is light.

3. The method as claimed in claim 1 wherein the physical information is polarization information, the imagable electromagnetic radiation is polarized, a

response of the detector elements is polarization sensitive and wherein the images are based on polarization from the surface.

6. The method as claimed in claim 1 wherein the plurality of detector elements are uniformly spaced and wherein the step of moving is performed uniformly and continuously.

7. The method as claimed in claim 1 wherein the step of computing includes the step of registering the images.

8. The method as claimed in claim 1 wherein the detector elements are elongated in a direction parallel to a detector axis of the detector, and wherein the detector also has an optical axis and wherein the step of moving is performed in a direction substantially perpendicular to the detector and optical axes.

9. The method as claimed in claim 8 wherein the detector is a multi-linear array camera.

10. The method as claimed in claim 8 wherein each detector element is a row of CCD sensing elements extending substantially parallel to the detector axis and wherein the step of moving is performed in a direction substantially perpendicular to the rows of the CCD sensing elements.

3. The method as claimed in claim 2 wherein the detector has an optical axis and wherein the step of moving is performed in a direction substantially paral-

lel to the optical axis and wherein the projected pattern of light is a stripe of lines.

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~~10~~. The method as claimed in claim 1 wherein the step of projecting is performed with two projectors.

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~~11~~. The method as claimed in claim ~~10~~ wherein the step of moving includes the step of cycling the object relative to the two projectors wherein the two projectors alternately project the pattern of imagable electromagnetic radiation.

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~~12~~. The method as claimed in claim ~~10~~ wherein the two projectors alternately project the pattern of imagable electromagnetic radiation during consecutive scans of the projected pattern of imagable electromagnetic radiation.

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~~13~~. The method as claimed in claim 2 further comprising the step of determining height of the surface of the object based on the phase and amplitude values.

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14. A system for high speed, scanning phase measuring of an object ~~at~~ a vision station to develop physical information associated with the object, the system including:

at least one projector for projecting a pattern of imagable electromagnetic radiation;

means for moving the object relative to the at least one projector at the vision station to scan the projected pattern of imagable electromagnetic radiation across a surface of the object to generate an imagable electromagnetic radiation signal;

a detector for receiving the imagable electromagnetic radiation signal from the surface of the object and having a plurality of separate detector elements for measuring an amount of radiant energy in the imagable electromagnetic radiation signal wherein the detector elements produce images having different phases of the same scanned surface based on the measurement;

means for maintaining the at least one projector and the detector in fixed relation to each other; and

means for computing phase values and amplitude values for the different phases from the images.

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15. The method as claimed in claim 14 wherein the physical information is dimensional information and the imagable electromagnetic radiation is light.

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~~16~~. The method as claimed in claim 14 wherein the physical information is polarization information, the imagable electromagnetic radiation is polarized, a response of the detector elements is polarization sensitive and wherein the images are based on polarization from the surface.

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~~17~~. The system as claimed in claim 14 wherein the plurality of detector elements are uniformly spaced and wherein the means for moving moves the object relative to the at least one projector uniformly and continuously.

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~~18~~. The system as claimed in claim 14 wherein the means for computing includes means for registering the images.

21. The system as claimed in claim 14 wherein the detector elements are elongated in a direction parallel to a detector axis of the detector and wherein the detector also has an optical component having an optical axis and wherein the means for moving moves the object relative to the at least one projector in a direction substantially perpendicular to the detector and optical axes.

22. The system as claimed in claim 21 wherein the detector is a multi-linear array camera.

23. The system as claimed in claim 21 wherein each detector element is a row of CCD sensing elements extending substantially parallel to the detector axis and wherein the means for moving moves the object relative to the detector in a direction substantially perpendicular to the rows of the CCD sensing elements.

16. The system as claimed in claim 15 wherein the detector has an optical component for receiving the reflected light signal, the optical component having an optical axis and wherein the means for moving moves the object relative to the at least one projector in a direction substantially parallel to the optical axis and wherein the projected pattern of light is a stripe of lines.

24. The system as claimed in claim 14 further comprising two projectors, the two projectors projecting the pattern of imagable electromagnetic radiation.

25. The system as claimed in claim 24 wherein the means for moving cycles the object relative to the

two projectors wherein the two projectors alternately project the pattern of imagable electromagnetic radiation during consecutive cycles.

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~~25~~. The system as claimed in claim ~~23~~ wherein imagable the two projectors alternately project the pattern of electromagnetic radiation during consecutive scans of the projected pattern of imagable electromagnetic radiation.

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~~26~~. The system as claimed in claim 15 further comprising means for determining height of the surface of the object based on the phase and amplitude values.

27. The system as claimed in claim 14 wherein the at least one projector and the detector at least partially define an optical head.